

Serial No. 10/622,467  
Amdt. dated July 27, 2006  
Reply to Office Action of May 17, 2006

Docket No. HI-0169

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A Private Branch Exchange (PBX) apparatus for transmitting and receiving CID (Caller ID) comprising:
  - an Analog Trunk Convergency (ATC) ~~unit circuit~~ for converging with an exchange in the PBX connected to the exchange;
  - a Subscriber Line Convergency (SLC) ~~unit circuit~~ for transmitting CID and/or data by converging with a subscriber line connected to each port;
  - a control ~~block circuit~~ for controlling a CID service for the analog trunk and the subscriber line ~~units~~circuits;
  - a data path control ~~block circuit~~ for controlling data transmission through a data path between the ATC ~~unit circuit~~ and the SLC ~~unit~~circuit;
  - a CID service ~~unit~~circuit, the CID service ~~unit~~circuit including a CID and signal detecting ~~unit~~circuit and a CID and signal transmitting ~~unit~~circuit that each perform digital signal processing on the CIDs and signals;
  - a signal transmitting/detecting ~~block circuit~~ for performing signal transmitting and/or detecting through the data path; and

a switching ~~block-circuit~~ for connecting the data path between the CID service ~~circuit~~, and the ATC ~~unit~~circuit and the SLC ~~unit~~circuit, and for selectively switching the data path between the signal transmitting/detecting ~~block-circuit~~ and the CID service ~~unit~~circuit.

2. (Currently Amended) The apparatus according to claim 1, wherein the ATC ~~unit~~circuit comprises:

a plurality of ports, each port comprising a converting ~~block-circuit~~ for converting the CID received from a public exchange through a subscriber line or office line into analog data and transmitting the data to the switching ~~block-circuit~~ through a highway as a data path, a ring detecting ~~block-circuit~~ for detecting a ring signal received from the public exchange through the subscriber line, and a holding line for establishing and holding the subscriber line; and

a local detecting ~~block-circuit~~ connected to the ports, for controlling CID transmission through a system path.

3. (Currently Amended) The apparatus according to claim 1, wherein the SLC ~~unit~~circuit comprises:

a plurality of ports, each of the ports comprising: a converting ~~block-circuit~~ for converting the CID transmitted through the switching ~~block-circuit~~ into a digital signal, a ring transmitting ~~block-circuit~~ for transmitting a ring to an affected receiver terminal in response to a

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ring transmission message from the local control block, and an off-hook detecting block-circuit for detecting off-hook status of the affected terminal of a receiver; and  
a local control block-circuit for controlling the transmission of the CID transmitted through a system bus.

4. (Currently Amended) An apparatus in a Private Branch Exchange (PBX) for transmitting and receiving a Caller ID (CID) comprising:

a CID detecting block-circuit for detecting a system signal and/or a CID received through a highway as a data path connected by a switching block, and storing the signal and/or the CID in a corresponding area per port inside a CID detection memory block;

a CID transmitting block-circuit for transmitting the CID to an affected receiver terminal through the highway as the data path;

a CID detection memory for assigning a memory area to each of subscriber ports of the SLC unitcircuit and storing the signal and/or the CID for a corresponding port;

a CID transmitting memory for storing a system signal and/or a CID in each port, in order to transmit a predetermined CID to an affected receiver terminal when a ring signal is transmitted to the affected receiver terminal; and

a local control block-circuit for controlling CID transmission to a corresponding port in a Subscriber Line Convergenc(y (SLC) unitcircuit through a system bus by reading the

signal and/or the CID of each port from the CID detection memory,

wherein the apparatus detects the CID or the system signal for a transmitted or received call at an Analog Trunk Convergency (ATC) unitcircuit and the SLC unitcircuit in the PBX and transmits the detected CID or signal to a receiver terminal.

5. (Currently Amended) The apparatus according to claim 4, wherein the CID detecting blockcircuit comprises:

a highway convergency blockcircuit for receiving the signal and/or the CID by converging with the data path connected by the switching block;

a CID detecting blockcircuit for detecting the CID received from the highway convergency block;

a system signal detecting blockcircuit for detecting a system signal transmitted to the highway convergency block; and

a memory interface blockcircuit for interfacing with the CID detection memory, to store the CID detected by the CID detecting blockcircuit and the signal detected by the system signal detecting blockcircuit in a predetermined memory area of a corresponding port.

6. (Currently Amended) The apparatus according to claim 4, wherein the CID transmitting blockcircuit comprises:

a memory interface ~~block-circuit~~ for interfacing CID that is transmitted from the CID transmitting memory;

a CID transmitting ~~block-circuit~~ for transmitting the CID from the CID transmitting memory to a highway convergency block, in order to transmit the CID to the switching block;

a system signal transmitting ~~block-circuit~~ for transmitting the system signal received from the CID transmitting memory; and

a highway convergency ~~block-circuit~~ for transmitting the signal and/or the CID by converging with the highway as the data path connected to the switching block.

7. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

establishing a line with the PBX through a general switched telephone network; converting a CID received through the line, and storing the CID through a switching ~~block-circuit~~ in a CID service ~~unit~~circuit at the PBX that includes at least one memory; and

transmitting all or part of the stored CID to a terminal, through the switching ~~block-circuit~~ and/or a Subscriber Line Convergency (SLC) ~~block-circuit~~ and display the CID on the terminal.

8. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

storing CIDs in a first memory in a CID service ~~unit~~circuit at the PBX;

storing preassigned CIDs for transmission out of the stored CIDs in a second memory in the CID service ~~unit~~circuit; and

transmitting the preassigned CIDs stored in the second memory to a caller ID terminal through a switching ~~block~~circuit and/or a Subscriber Line Convergency (SLC) ~~unit~~circuit.

9. (Currently Amended) The method according to claim 8, wherein the first memory comprises a caller detection memory of the CID service ~~unit~~circuit.

10. (Currently Amended) The method according to claim 8, wherein a system control ~~block~~circuit stores the preassigned CIDs out of the stored CIDs in the second memory through a control ~~unit~~circuit of the CID service ~~unit~~circuit, the second memory comprising a CID transmitting memory .

11. (Currently Amended) The method according to claim 8, wherein the storing CIDs

in the first memory comprises:

receiving a ring from a public exchange to an Analog Trunk Convergency (ATC) ~~unitcircuit~~ in a PBX;  
detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, to a system control ~~block-circuit~~ through a system bus regarding the reception of the ring;  
if receiving the ring is reported, connecting, at the system control ~~block-circuit~~ in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service ~~unitcircuit~~ through a switching block;  
detecting, at a CID detecting block, the CID through a highway convergency ~~block-circuit~~ based on a predetermined signal; and  
storing the detected CID in a predetermined area per port in a CID detection memory, through a memory interface block.

12. (Currently Amended) The method according to claim 8, wherein storing prearranged CIDs for transmission in the second memory comprises:

if receiving the call is reported from the Analog Trunk Convergency (ATC) ~~unitcircuit~~, transmitting, at a system control block, a ring transmission message to a local control ~~block-circuit~~ in a Subscriber Line Convergency (SLC) ~~unitcircuit~~ using a system bus through a

system bus control block, and simultaneously, transmitting a system signal and/or a caller ID message; and

if the local control ~~block-circuit~~ receives at least one of the ring transmission message, the system signal, and the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory.

13. (Original) The method according to claim 8, further comprising:

displaying the transmitted CIDs on the caller ID terminal.

14. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

receiving a ring from a public exchange to an Analog Trunk Convergency (ATC) ~~unit~~circuit in a PBX;

detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, the reception of the ring to a system control ~~block-circuit~~ through a system bus;

if receiving the ring is reported, connecting, at the system control ~~block-circuit~~ in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service ~~block-circuit~~ at the PBX through a switching block;

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detecting, at a CID detecting block, the CID through a highway convergency ~~block-circuit~~ based on a predetermined signal;

storing the detected CID in a predetermined area per port in a CID detection memory of the CID service block, through a memory interface block

if receiving the ring is reported from the ATC ~~unit~~circuit, transmitting, at a system control block, a ring transmission message to a local control ~~block~~circuit in a Subscriber Line Convergency (SLC) ~~unit~~circuit using a system bus through a system bus control block, and simultaneously, transmitting a system signal and/or a caller ID message;

if the local control ~~block~~circuit receives at least one of the ring transmission message, the system signal, or the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory in the CID service block;

reading, at a system control block, the system signal and/or the CID stored in the CID transmitting memory, and transmitting the CID to the SLC ~~unit~~circuit through a switching ~~block~~circuit and a system bus; and

if the local control ~~block~~circuit in the SLC ~~unit~~circuit provides the CID to a corresponding port, transmitting the CID through a subscriber line and displaying the CID on a caller ID phone at a subscriber side.

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15. (Currently Amended) A CID service ~~unit~~circuit in a PBX comprising:
  - a first memory configured to receive and store a Caller ID (CID);
  - a second memory configured to store preassigned CIDs out of the stored CIDs for transmission; and
  - a switching ~~block~~circuit configured to transmit the CIDs stored in the second memory to a caller ID terminal.
16. (Currently Amended) The communication system of claim 15, further comprising:
  - a Subscriber Line Convergency (SLC) ~~unit~~circuit configured to receive the CIDs from the switching ~~block~~circuit and to route the CIDs to the caller ID terminal.
17. (Original) The communication system of claim 15, wherein the first memory is a caller detection memory of a CID service block.
18. (Original) The communication system of claim 15, wherein the second memory is a CID transmitting memory.
19. (Currently Amended) The communication system of claim 18, further

comprising:

a system control ~~block~~circuit configured to store the preassigned for transmission in the CID transmitting memory, through a control ~~block~~circuit of a CID service ~~unit~~circuit.

20. (Currently Amended) The communication system of claim 15, further comprising:

an Analog Trunk Convergency (ATC) ~~unit~~circuit configured to receive a ring from a public exchange;

a ring detecting ~~block~~circuit configured to detect whether the ring is received, and to report the reception of the ring;

a system control ~~block~~circuit in the network exchange, configured to connect a data path of a corresponding port to a Caller ID (CID) service ~~unit~~circuit through a switching block, if the ring is reported as received;

a CID detecting ~~block~~circuit configured to detect the CID through a highway convergency ~~block~~circuit based on a predetermined signal; and

a memory interface ~~block~~circuit configured to store the detected CID in a predetermined area per port in a CID detection memory.

21. (Currently Amended) The communication system of claim 15, further

comprising:

a system control ~~block~~ circuit configured to transmit a ring transmission message to a local control ~~block~~ circuit in a Subscriber Line Convergency (SLC) ~~unit~~ circuit, and to transmit a system signal and/or a caller ID message, if the call is reported from an Analog Trunk Convergency (ATC) ~~unit~~ circuit as received; and

wherein the second memory id configured to store a system signal and/or caller ID, if the local control ~~block~~ circuit receives at least one of the ring transmission message, the system signal and caller ID.

22. (Currently Amended) The communication system of claim 15, wherein the system control ~~block~~ circuit is configured to transmit the ring transmission message and to transmit the system signal simultaneously.

23. (Original) The communication system of claim 15, wherein the network exchange is a Private Branch Exchange (PBX).

24. (Original) The communication system of claim 15, wherein the caller ID terminal is a phone configured to display the CID.